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EXAMINER	
CHU, KIM KWOK	

ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/642,674	HONG ET AL.	
	Examiner	Art Unit	
	Kim-Kwok CHU	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/19/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> *A person shall be entitled to a patent unless--*
> *(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

2. Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being anticipated by Son et al. (U.S. Patent 6,42,674).

Son teaches a method of correcting a tilt in a disk drive having all of the steps as recited in claims 1 and 2. For example, Son teaches the following:

(a) as in claim 1, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710);

(b) as in claim 1, searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines 22-26);

(c) as in claim 1, calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33);

(d) as in claim 1, correcting the tilt of the disc (Fig. 7, step S716);

(e) as in claim 1, storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or reproducing sector (Fig. 7, step S712);

(f) as in claim 1, if a tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716); and

(g) as in claim 2, the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

3. Claims 3-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Son et al. (U.S. Patent 6,42,674).

Son teaches a tilt correcting apparatus having all of the elements and means as recited in claims 3 and 4. For example, Son teaches the following:

(a) as in claim 3, a pickup that radiates light onto the disc (Fig. 2);

(b) as in claim 3, a tilt detector 26 that detects a tilt of the disc using the pickup (Fig. 2);

(c) as in claim 3, a motor 28 that drives the pickup to correct the tilt of the disc 11 ;

(d) as in claim 3, a memory 38 that stores a tilt angle for each of the plurality of recording and reproducing sectors of the disc 11 (Fig. 2);

(e) as in claim 3, a controller 36 that, if the tilt of the disc is detected, searches the memory for the tilt angle for the recording or reproducing sector of the disc wherein the pickup is currently positioned, and controls driving of the motor using the searched tilt angle (Figs. 2 and 7); and

(f) as in claim 4, if the tilt angle is not found in the memory, the controller 36 calculates the tilt angle for the recording or reproducing sector of the disc wherein the pickup is currently positioned based on the tilt of the disc, corrects the tilt of the disc using the calculated

tilt angle, and stores the calculated tilt angle in the memory (Fig. 7; steps S706 and S710-S716).

4. Claims 5 and 6 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 5 however also recites the following limitation which is also taught by the prior art of Son:

(a) as in claim 5, the pickup moves in a radial direction of the disc (Figs. 2 and 7; steps S704 and S706).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

6. Claims 7 and 8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Son et al. (U.S. Patent 6,42,674) in view of Nishiwaki (U.S. Patent 6,704,254).

Son teaches a tilt correcting apparatus very similar to that of the present invention as recited in claims 7 and 8. For example, Son teaches the following:

(a) as in claim 7, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710);

(b) as in claim 7, searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines 22-26);

(c) as in claim 7, calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33);

(d) as in claim 7, correcting the tilt of the disc (Fig. 7, step S716);

(e) as in claim 7, storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or reproducing sector (Fig. 7, step S712);

(f) as in claim 7, if a tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716); and

(g) as in claim 8, the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

However, Son does not teach the following:

(a) as in claim 7, tilt correcting method is implemented by a computer readable encoded with processing instructions (program).

Nishiwaki teaches an optical disk control method where its tilt adjustment is controlled by a program stored in a recording medium (column 17, claim 14).

In order to access compensated values in a tilt correcting operation, a software servo program is more flexible than a hardware device such as a digital signal processing unit. Therefore, when there is a disc servo control where variables such as tilt correcting values needed to be stored, it would have been obvious to one of ordinary skill in the art to implement the tilt servo method such as Son's in form of Nisiwaki's software executable instructions and stored it in Nishiwaki's computer readable recording medium instead of electronic circuits, because the software design cost less and its instructions/steps can be updated or modified.

7. Claims 9-11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Son et al. (U.S. Patent 6,42,674) in view of Takeda et al. (U.S. Patent 6,754,154).

Son teaches an optical pickup motor driving method very similar to that of the present invention as recited in claims 9-11. For example, Son teaches the following:

(a) as in claim 9, driving a motor 30 (Fig. 2);

(b) as in claim 9, reading information on a number of required driving pulses (tilt signals) corresponding to a position (tilt) of a pickup 20 (Fig. 2; column 5, lines 5-18; pickup positioned by its motor means and driven by control/servo signals);

(c) as in claim 9, calculating a number of driving pulses (tilt signals) to be generated based on the number of driving pulses required and a number of driving pulses previously generated (Figs. 2 and 7; tilt signals are searched and calculated; steps S710-S716);

(d) as in claim 9, generating the calculated number of driving pulses (Figs. 2 and 7; steps S714);

(e) as in claim 9, storing the calculated number of driving pulses corresponding to the position of pickup (Figs. 2 and 7; steps S712);

(f) as in claim 10, the position (tilt) of the pickup 20 corresponds to one of a plurality of recording and reproducing sectors of a disc 11 (Figs. 2 and 7); and

(g) as in claim 11, the motor 30 is used to correct a tilt of the disc (Figs. 2 and 7).

However, Son does not teach the following:

(a) as in claim 11, the motor is a stepping motor.

Takeda teaches the following:

(a) an optical disk having a tilt correcting stepping motor 28 (Fig. 5; column 18, lines 53-58).

To maintain the stability of a rotating disk, it would have been obvious to one of ordinary skill in the art to use a tilt stepping motor such as Takeda's in Son's tilt driving means, because the stepping motor has an advantage of smooth operation.

8. Claims 12-14 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Son et al. (U.S. Patent 6,42,674) in view of Takeda et al. (U.S. Patent 6,754,154) and Nishiwaki (U.S. Patent 6,704,254).

Son teaches an optical pickup motor driving method very similar to that of the present invention as recited in claims 12-14. For example, Son teaches the following:

(a) as in claim 12, driving a motor 30 (Fig. 2);

(b) as in claim 12, reading information on a number of required driving pulses (tilt signals) corresponding to a position (tilt) of a pickup 20 (Fig. 2; column 5, lines 5-18; pickup positioned by its motor means and driven by control/servo signals);

(c) as in claim 12, calculating a number of driving pulses (tilt signals) to be generated based on the number of driving pulses required and a number of driving pulses previously generated (Figs. 2 and 7; tilt signals are searched and calculated; steps S710-S716);

(d) as in claim 12, generating the calculated number of driving pulses (Figs. 2 and 7; steps S714);

(e) as in claim 12, storing the calculated number of driving pulses corresponding to the position of pickup (Figs. 2 and 7; steps S712);

(f) as in claim 13, the position (tilt) of the pickup 20 corresponds to one of a plurality of recording and reproducing sectors of a disc 11 (Figs. 2 and 7); and

(g) as in claim 14, the motor 30 is used to correct a tilt of the disc (Figs. 2 and 7).

However, Son does not teach the following:

(a) as in claim 12, the motor is a stepping motor; and

(b) as in claim 12, the motor driving method is implemented by a computer readable encoded with processing instructions (program).

Takeda teaches the following:

(a) an optical disk having a tilt correcting stepping motor 28 (Fig. 5; column 18, lines 53-58).

Nishiwaki teaches the following:

(a) an optical disk control method where its tilt adjustment is controlled by a program stored in a recording medium (column 17, claim 14).

To maintain the stability of a rotating disk, it would have been obvious to one of ordinary skill in the art to use a tilt stepping motor such as Takeda's in Son's tilt driving means, because the stepping motor has an advantage of smooth operation.

Furthermore, in order to access tilting compensated pulses to drive a tilt correcting motor, a software servo program is more flexible than a hardware device such as a

digital signal processing unit. Therefore, when there is a disc servo control where variables such as tilt correcting values needed to be stored, it would have been obvious to one of ordinary skill in the art to implement the tilt servo method such as Son's in form of Nisiwaki's software executable instructions and stored it in Nishiwaki's computer readable recording medium instead of electronic circuits, because the software design cost less and its instructions/steps can be updated or modified.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ito (6,940,797) is pertinent because Ito teaches a stepping motor for driving an optical pickup.

Lee et al. (6,940,797) is pertinent because Lee teaches a tilt control on a disk drive.

10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch, can be reached on (57) 272-7589.

The fax number is:
(571) 273-8300 (for formal communications intended for entry. Or:
(571) 273-7585, (for informal or draft communications, please label "PROPOSED" or "DRAFT").

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

THANG V. TRAN
PRIMARY EXAMINER

Kim-Kwok CHU

7/7/06

Examiner AU2627
July 7, 2006

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